Regulus

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada – Sept 2006

Coming up…

RASC Regular Meetings

Queen's University
Stirling Hall Theatre A

Friday Sept 8 *Member's night*
Friday Oct 13

Meetings are co-sponsored by Queen's Physics and include astronomy lectures open to the public.

KAON Public Observing

Queen's Observatory
Ellis Hall
Saturday Sept 9 9:00 - 10:30
Saturday Oct 14 9:00 - 10:30

AstroYak

AstroYak is cancelled for September
Friday Oct 27 19:00

Members Observing

Sept 22-24- Fall 'n Stars

Note Room Change:
Regular meetings are currently at Queen's University in Stirling Hall theatre "D". In order to facilitate a closer atmosphere, we'll be moving to theatre "A" starting in September. Theatre "A" is just down the hall from theatre "D"

Kingston Centre Upcoming Events

Fall 'n Stars

Our 7th Annual Star Party, held in conjunction with the RASC-Belleville Centre and this year also with the Peterborough Astronomical Association, will be held on the weekend of September 22-24th, 2006. For more details visit the Fall'N'Star website at http://www.rascbelleville.ca/fallnstars/
The location is the same again this year, at the Vanderwater Conservation Area Boy Scout Camping Area, Thomasburg, Ontario. In past years we've had about 40 members and friends join us for games, talks, and some great dark sky observing.

Observational Astronomy for the Novice

The next OAftN course starts September 25 and continues Monday night for 8 weeks.

The non-credit course is aimed at both members of the general public who have an interest in astronomy and to members of the RASC-KC who are looking for some formal instruction in a classroom setting.

Want to reserve a space in the next class? Simply send an email to the centre address kingston@rasc.ca

Kingston Centre of the Royal Astronomical Society of Canada
Box 1793 Kingston Ontario K7L 5J6
http://www.rasc.ca/Kingston
infoline: 613-377-6029
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President's Tid Bits

Kim Hay

I guess my next instalment of the Tid Bits will contain all the fun I know I will have at the SSSP (http://www.usask.ca/psychology/sarty/rasc/starparty.html), since writing this is before the event. I and other's hope to hear about anyone that attended a Star Party some place , be it Star Fest, which is celebrating its 25th Anniversary this year, or a smaller Star Party like Huronia Star Party, Gordon Park Star Party or the Frozen Banana Star Party. There were many to choose from and one that would certainly fit your schedule.

It is always a good place to let yourself get introduced to new telescopes, observing techniques, ask questions, and learn many new things. Its a great inspiration, and gives you the observing bug if you did not already have it and leaves you always longing for more.

Even though the summer months are zooming by as light speed this season, it has been not a bad summer for observing, though some have noted it has been very hazy and many clouds seem to have persisted.

But the great thing about our hobby , is there are many facets to observe. Solar and Planetary in the day, along with some brighter stars. There is the deep sky observing, when the astronomical twilight ends and a few precious hours of dark sky prevail. There are meteor showers, as the Persied Meteor shower that peaked on August 12 . Yes it was a challenge this year, due to the moon, which was just past full. Then again for those really cloudy nights, there is always picking up the latest copy of Sky New, Sky and Telescope or Astronomy and read up on what others are observing, finding and what the newest gadgets are.

We have a great hobby, and one that we can dabble in all aspects of the universe, and really feel apart of it. So go outside, take the binoculars and lay back on the lawn or a blanket, and enjoy yourself. Let the Milky Way take you on the journey down the path from South to North, and let yourself get lost, its ours to enjoy.....so enjoy!

See you on September 8 in our new meeting room, Stirling Hall Theatre "A". Looking forward to hearing of your summer adventures.

RASC Kingston Centre Big Bang-Quet

Date: Saturday November 4, 2006

Location: Christ Church Parish Hall
990 Sydenham Rd
Kingston

Time: 5:00 Cocktails
6:00 Prime Rib Dinner
7:30 Speaker
9:00 Awards Ceremony

Speaker for the evening will be Ross Kilpatrick, Emeritus Professor of Classics, Queen's University "Gustav Klimt and the Stars: A Dionysian Iconography for "The Kiss"'

Price: $30 Per Ticket (see Diane Torney)
wine & beer available for purchase

The Sky is the Limit Festival

Susan Gagnon

Once again this annual fundraiser for the March of Dimes was an excellent chance for the Centre to get a little public exposure. A full day of solar observing

was made possible by the efforts of Kim, Kevin and Hank who never fail to produce various shade devices which they faithfully pack in their vans. Although the humidity was down the sun was hot, hot, hot! The clear weather, a variety of scopes and filters and an enthusiastic band of volunteers resulted in a satisfied public. The traffic was steady though our display area all day. In the afternoon Terry Bridges brought out the Queen's Coronado. I think that this is a great treat for

Terry with the Queen's Coronado H-alpha Solar Telescope

the members and it really perks you up on what can be a long day. I fear few of the public observers realize that they are lucky to have a chance to use H alpha. But I think we are worth it! A large volume of flyers were given out and there was a lot of chat. Other folks who made the day great were Steve on the info tent, Laura on scope, and Ruth and Terry with a baked goods drop! If I missed anyone please forgive me, it was probably sun stroke related.

Beware: That Mars Story Is A Hoax!

Leo Enright

Within the past two weeks I have received so many queries regarding the "coming Mars event on August 27th" that I have decided to put the record straight. Many people have reported receiving an e-mail with outlandish claims about the planet Mars; specifically, it states that on August 27th Mars will be "as large and as bright as the Full Moon!!!" This claim is totally false; it is a lie; it is a hoax. No such thing will occur, either on August 27, or at any other known time.

Like many hoaxes, or "urban legends", as some people call such sorry claims, there is a reason for the existence of this story. Three years ago, on August 27th, 2003, Mars did make a close approach to Earth. It was of considerable interest to astronomers. Astronomers, both professional and amateur, know that Mars is at opposition every 26 months. That is once every 2 years and 2 months, and at those times (or within a week or so of those dates) Mars is closer to Earth than at any other time in that 26-month cycle. Sophisticated calculations showed that, at the time of the late-August 2003 opposition, Mars happened to be closer than at any other time in the past 59,000 years. It was only very slightly closer than at other oppositions that had occurred in the 1920's and at other times in recorded history, but, even though it was be a very slight amount, it still appeared to be a record for Mars-Earth closeness in all of recorded history. Therefore, to the naked eye, Mars would have appeared *very slightly brighter* than it had appeared in June 2001 and in April 1999 and in February 1997, and to those who had a telescope Mars would appear *very slightly larger* and slightly clearer and more resolved in the eyepiece than it had appeared in June 2001 and April 1999 and February 1997. Again in October 2005 Mars was at opposition and very slightly brighter to the naked-eye and very slightly larger than usual in the telescope, but slightly "less bright" and slightly "less large" than it had been in August 2003.

To alert other astronomers to this fact, in July of 2003, an article was written by an astronomer, stating correctly that **in their telescopes, at very considerable magnification**, "Mars would appear as big, and as bright, and as large as the Full Moon appears **to the naked-eye**." Shortly after the appearance of that article, which again was originally correct, someone, who was either acting through carelessness or with an intentional desire to deceive, repeated the statement **leaving out the part of the sentence that mentioned the mars observation being made with a telescope!!!** It was circulated in an e-mail, and the "chain-letter process" began. Because of the omission, all the readers assumed that the 2003 observations were about a comparison of mars observed naked-eye with the full moon observed naked-eye. That was not the intention of the original article. Leaving out a part of a sentence completely distorted the statement. This chain letter appeared

again in July and August of 2004 and July and August of 2005, and regular as clockwork, it appeared again this summer. My prediction is that this nonsense will reappear on the internet again in the summer of 2007, and 2008, and for a long, long time to come.

One reason that some people may be inclined to accept such hoaxes is that so few people stop to think of some basic facts regarding the solar system, facts that they may have learned in school a long time ago. They have learned that the orbits of Mercury and Venus are smaller than that of Earth, and the orbits of Mars, Jupiter, Saturn are bigger than the orbit of Earth. Only Earth has a year of 365 1/4 days with seasonal changes occurring on that basis. On Mars the year is 687 Earth-days long with seasonal changes occurring on that basis. On Jupiter the year is almost 13 Earth-years long, and on Saturn the year is 29 ½ Earth-years. It is utter nonsense to think that any noticeable change on any other planet will occur every year on an Earth-yearly basis, or according to our Earth-year calendar. It might make some sense, if a hoaxter were to propose that some change on Mars occurred once every 687 days, or on Jupiter once every 13 years, or on Saturn once every 29 ½ years. However, to suggest some bizarre event on another planet occurring every August 27th, or some on some other regular date in the Earth-based calendar, is just totally ridiculous.

Another easy indication that this hoax is nonsense is the fact that the Earth-Mars cycle is about 26 months long, as was stated above, and this "so-called 'spectacle'" is an "off-year" for mars observations.

It is safe to say that no-one on Earth will even see Mars between August 16th and November 23rd, 2006! Yes, I repeat: no-one on earth will even be able to see mars on august 27th, 2006!! As stated above, the recent favourable years for observing Mars have been 1997, 1999, 2001, 2003, 2005, and in the future December 2007. The very unfavourable "off-years" for observing Mars have been, and are, the intervening years, namely 1998, 2000, 2002, 2004, and 2006. During the "off-years" the orbit of Mars is such that the planet is "over on the other side of the sun" and difficult to see because it is both far away and the brightness of the sun blocks the view.

Although we were able to catch a view of Mars low in the western evening sky in the early part of this year, it has become more and more difficult to see in the past two months. The red planet was visible in the first half of august and for only a short while on clear evenings beginning about 30 minutes after sunset. After mid-august it will not be seen again, by viewers in this area until December. That means no one will be seeing Mars at all on August 27th, or on any other date in late summer of this year.

Please be warned. The "Mars Spectacle" is a bogus chain letter, a lie, and a hoax. Be prepared to challenge those who repeat such nonsense.

Target for Tonight

Susan Gagnon

Target for Tonight is an observing by constellation planning tool. Look for additions to the Target for Tonight each month. For more detail, see the February 2006 issue of Regulus.
These lists have 2 purposes.

a) to help provide some structure to a beginning observers' session planning.
b) to provide a method of tracking objects observed in the context of some of the lists that have been compiled by experienced observers.

Happy Observing! SG

Sagittarius
ETU: M8, M22, M17, M23, M24, M25, Nunki.

Messier: M23, M20, M8, M21, M24, M18, M17, M28, M25, M69, M70, M54, M55, M75, M22.

Finest NGC: 6445, 6520, 6818.

Levy List: 147 (NGC 6638), 149 (NGC 6553), 243 (NGC 6440).

Scorpius
ETU: Antares, M4.

Messier: M6, M80, M4, M7.

Finest NGC: none

Levy List: none.

Ophiuchus

ETU: X Ophiuchi

Messier: M12, M10, M62, M19, M9, M14.
Finest NGC: 6369, 6572, 6633.

Levy List: 207 (NGC 6384), 208 (NGC 6426), 271 (NGC 6287), 334 (NGC 6342).

Observing Report

Ken Kingdon

Friday, Aug. 4/5 had a pristine sky - the best since April 28th, I believe. The dry air mass was clear and cloudless, except for 25 minutes as a cloud-bank passed by eastward on its way to Brockville. :) Temperature remained 22-degrees - warm enough all night for light summer wear. The mosquitos were nil in my backward. I used my 12.5-inch Newtonian scope.

The waxing gibbous Moon travels low along the summer ecliptic, so seeing was not the best for awhile, but then improved, so I pushed to 508x (using my 2x Barlow) and enjoyed an amazing view as my "flying saucer" hoved over the Lunar landscape searching for a landing spot. Using test stars in Lyra, I was able to determine that my FOV is only 6.5 arcminutes (or, 0.10 degrees). That makes it hard to search for Messiers, but I did after the Moon got low behind trees. WOW! The Globular Cluster M13 at 508x fills the entire FOV perfectly, yet its stars remained crisp... it was like being right inside the darn core of the thing!! M22 and M15 were almost as good.

I did not use any star atlases, but worked only from Starry Night on my "observatory's" home computer, which shows much fainter stars than any paper atlas. This allowed me to get precisely onto Comet 177P Barnard 2, located in the Keystone of Hercules (and nearing M13 this week). Motion was detected in about an hour. The previous passage of periodic Comet Barnard 2 was last seen in its discovery year 1889. Barnard was roughly calculated not to re-appear until 2026 or 2035, but surprise... like a party-crasher, it suddenly arrived unannounced just six weeks ago at mag 22. It has now greatly brightened as it approaches Earth, and should be decent, if viewed from a rural site. But it was observed from my urban backyard (Visual Limiting magnitude 4.9) as being VERY faint, yet distinct. For the next week it continues at maximum brightness for this passage, and reaches perihelion August 29th, then dims greatly. If you want to observe it, a dark rural sky is strongly advised.

I observed both Uranus and Neptune. Uranus has 5 Moons, all are magnitude 16.5, so at Nirvana later this month, any scope larger than 20-inch aperture could see them.

For Neptune, I magnified it to 380x, and using Starry Night, I knew precisely where to look, and could just dectect its moon Triton. This was my first ever view of Triton, and I hope to enjoy a better view at the upcoming RASC-KC trip to the awesome skies north of Bon Echo at Nirvana.

I saw a delta-Aquarid meteor zip across through Aquila. Its train was long, all sparkling, and bright. Numerous bright satellites passed overhead, masquerading as UFOs.

Returning to low power 51x, and after an arduous star-hop, I just barely found M55. Four previous backyard attempts this summer had all failed ...it's very vague from my urban backyard, one of the faintest objects I've ever seen [but note that it was rated exquisite on August 07, 2002 when I viewed it from the dark-skies at Arden]. M55 is a very loose, grainy Globular Cluster... exactly as described by its discover Lacaille in 1752: "like the obscure nucleus of a moderately big comet". Perhaps because M55 is so very loose, higher magnifications of 117x and 254x did not help to overcome the utterly poor contrast that occurs within Kingston's light dome for objects located at low declinations.

I began a nice warm night ... that's Summer, right? But I heard Thrushes flying overhead in the still of darkness, so migration has officially begun... that's Fall, right? Before dawn I saw Orion ... so that's Winter, right? Just what the heck SEASON was it??

A Dome on a Home: The Story of Winchester Observatory

Walter MacDonald

Introduction

In 2002 I moved from Oshawa to Winchester. Moving from an urban area with a local population of some 250,000 people to a small town of about 3,000 people made for a great improvement in sky conditions. For example, in Oshawa only the barest hint of Milky Way is visible - and then only on the most transparent of nights. In Winchester, the Milky Way is not only visible, it is obvious and detailed. However, my new horizons are dominated by trees in the east as well as by the house and two other buildings. And so it was that the idea was hatched to build an observatory three storeys up in my attic, complete with an indoor control room!

A rooftop observatory is not a new idea by any means and many people have already done this. One example from the Kingston Centre is Mark Kaye's rooftop setup, which he has used for some years now. After considering various options (like flip-tops and sliding roofs) I settled on a 6-foot diameter HomeDome, complete with the DigitalDomeWorks hardware for motorization. The roof has a flat section down the center that is about six feet in width, so that made the design particularly easy.

The dome kit arrived in a crate in September 2002. By the time the building permit and contractor were all ready to go, it was January 2003 and a very cold winter was in progress!

Construction

A few things had to be done in preparation for the start of construction. Scaffolding was put up to reach the roof (3 storeys up). Also, some knob-and-tube wiring in the attic as well as one light fixture in a 2nd floor bedroom had to be moved to accommodate the placement of the steel beams. Fortunately these were not difficult tasks.

On January 28th, a hole was cut in the roof of the house, a 25-ton crane arrived from Ottawa, and two 400-pound steel beams were placed between joists in the attic, spanning the full width of the house and resting on the tops of the outside walls. This gives partial isolation of the telescope pier from the floor and has worked out very well

With the first beam in place, the second beam is being carefully moved in. At 400 pounds apiece this takes

With the beams in place and the roof repaired, work moved along in the attic where it was much warmer than outside (+5C versus -20C outside). Loose insulation was removed from between the joists, vapour barrier was added, and fibreglass batts were used to re-insulate everything. This made the attic noticeably colder than before -- a good thing! It meant that the heat from downstairs was staying downstairs, something that bodes well for the thermal performance of the observatory.

On February 3rd, a temporary hole was cut in the center of the roof (where the dome would eventually go) which allowed 4'x8' sheets of plywood to be placed in the attic. This was the only way to get these materials up to the attic since there was no way to get such bulky items up the staircase inside the house. A very nice solar halo was observed on this day, which I took to be a good omen for the developing observatory.

A subfloor was built next, followed by the actual floor of the observatory itself, 34.5" inches above. A small 3-step stair was built into the northwest corner of the floor. The stair was hinged at the top to allow it to be flipped up, thus giving access to the base of the pier under the raised floor.

The raised floor of the observatory, including the cutout (at right) for the stairs.

On top at last! Standing on the observatory floor and looking around the opening in the roof for the first time was the highlight of the construction phase for me!

The stairs are hinged to allow flipping them up out of the way to give access to the volume underneath the raised floor. This is handy when running new wires out to the dome!

February 7th, 2003 was a momentous day: the full roof opening for the dome was finally opened up by lunchtime. It was rather surreal to have daylight and fresh air in the attic. The view from 3-and-a-bit storeys up was quite nice!

With the completion of the wall structure up through the roof of the house (including a storage cubby in the north wall -- see figure five), we were now ready to focus on getting the dome installed. The manufacturer recommended doing a trial assembly to make sure all the parts were present and accounted for, that everything fit, and that we were familiar with the assembly process. Since it was in the -20s Celsius outside, we decided to assemble the dome in the +20C

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warmth of the finished part of the attic (part of which is the control room). This went quite smoothly since all parts WERE present and accounted for, and everything fit the way it was supposed to! Since I had ordered the factory pre-assembly option, all the necessary holes had already been drilled in the dome and everything had even been labeled. This saved quite a bit of time and effort at our end (all part of the plan you understand!). At this point we had a fully assembled dome in the attic -- a dome IN a home, you might say! In fact, this was quite possibly the world's first INDOOR dome!

A storage cubby was built into the north wall of the observatory. Since the observatory interior is only 6'x6', the storage space is quite handy!

The most important item in simplifying the design and construction of the observatory was the fibreglass rectangular skirt that was ordered with the dome. This four-piece kit makes the transition from the square footprint of the observatory walls to the round footprint of the dome. Since the dome is so lightweight (it is also composed of fibreglass), the skirt is actually self-supporting and requires no supporting structure (other than the tops of the walls).

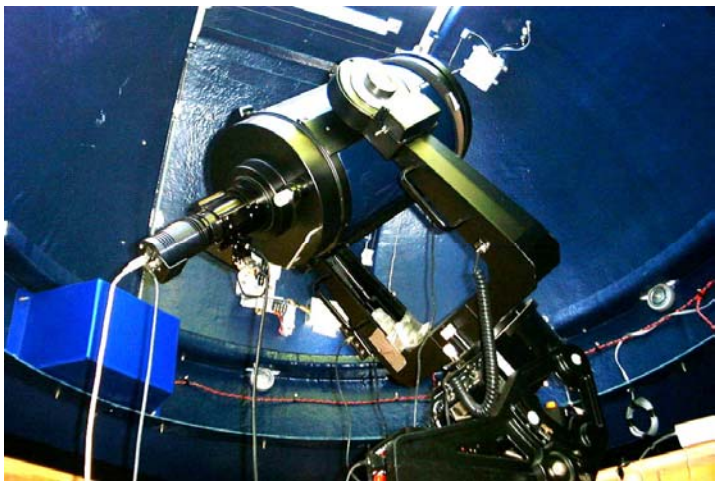
On February 18th, the skirt was quickly assembled atop the walls, the dome support ring was assembled on top of the skirt, and finally the two dome hemispheres and back plate were put in place atop the ring. The final tasks were the installation of the shutter and its cabling system as well as the electrical components (including the DigitalDomeWorks controller -- the "brains" of the observatory).

Now at last the observatory really looked like an observatory! The final task was to install the pier. There was some delay in getting the pier fabricated, but it did eventually arrive. Drilling holes in the steel beams to connect the pier to was not an easy job and I'm glad I didn't have to do it!

Observation: The Next Generation...

The first few nights of observations (deep sky and variable star) in the new observatory were done with my old 1980-vintage orange-tube C8. This was only appropriate since this scope had also inaugurated my other two observatories: my domed observatory at Thomasburg, and my Merry-Go-Round observatory in Oshawa (now in Winchester, but that's a story for another time!). The convenience of walking up to the attic and going out to the dome to observe was awesome! Just think, I didn't actually have to go outside to get into the observatory! That's pretty nice in the wintertime...

The next step was to lug my 10" f/6.3 LX-200 and super-wedge up to the dome and mount them on the pier. With these in place, I was now able to do "goto" observing from the new observatory -- even better (see figure six)! During April, May, and June of 2003 I alternated between visual variable star observing and CCD imaging of the deep sky and variable stars. The imaging was particularly convenient since I could sit in the control room and run the telescope, camera, focuser, and dome right from my chair! Since the equipment was always set up and polar aligned, I could observe even if it was only clear for half an hour. (In the "bad old days" it took me close to an hour to set up for CCD imaging, so this gives one an idea of just how much work having a permanent setup saves!)



The 10" f/6.3 LX-200 at Winchester Observatory.

With the extreme convenience of the new setup, I could not bear the thought of letting even a single moment of clear sky go to waste! By July, I was using the new observatory exclusively for CCD work. The CCD allows full moon skies to be utilized, which adds considerably to the available usable sky-time. Also, CCD allows the use of astronomical twilight for imaging which in the summertime practically doubles the amount of usable sky time! There would be no rest for the wicked now!

Next month: Automating the Winchester Observatory

The CFH Telescope Upgrade News Release

The Canada-France-Hawaii Telescope goes wide in the Infrared too

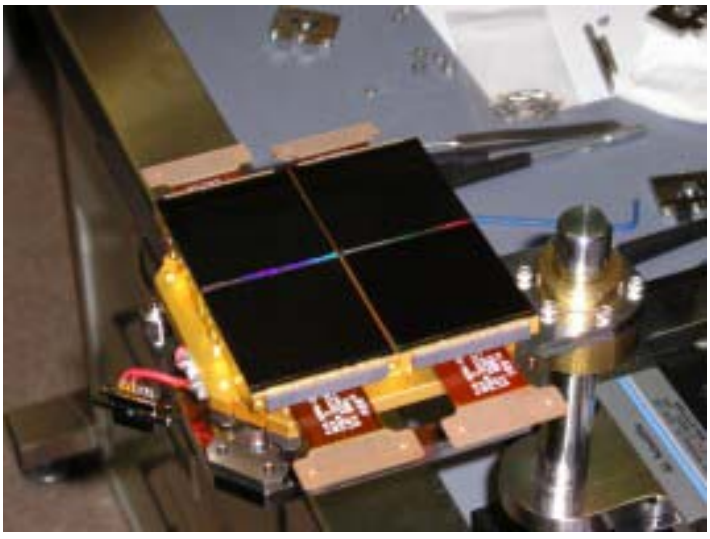
June 29, 2006 - With MegaCam, the largest wide-field digital camera ever operated on a telescope, CFHT has delivered exciting science as well as stunning pictures of the universe for the past three years. MegaCam images are, however, limited to the visible light. Today, CFHT is extending its wide vision to the invisible red side of the spectrum, thanks to WIRCam,

an infrared camera recently put in operation on CHFT's 3.6-m telescope on Mauna Kea, the highest mountain of the Island of Hawaii.

Images obtained during the commissioning phase of the camera and released today illustrate its excellent image quality and shows how it complements MegaCam.

Already heavily used for its first operational runs, WIRCam is gathering complementary infrared images for large programs already undertaken with MegaCam in the visible, like the CFHT Legacy Survey or with the NASA Great Observatories like the Hubble Space Telescope or Spitzer. WIRCam-dedicated large programs are also on their way, such as a search for isolated planetary mass objects in star forming regions.

With WIRCam and MegaCam, CFHT is the only facility in the world offering its users the opportunity to observe their favorite areas of the sky from the near ultra-violet (0.320 micrometers) to the near infrared (2.5 micrometers). While WIRCam has only one-ninth of the field of view of MegaCam, it is joining a very selective club of infrared arrays, all of them operating from Mauna Kea, boasting as many as 16 MegaPixels. It is also the first one in operation to work with the new generation of infrared detectors that will be used on the James Webb Space Telescope and taking advantage of the on-chip guiding capability of these devices built by Rockwell Scientific.



4 detectors in the mosaic can be read in a few seconds and exposure times are limited by the brightness of the sky itself, typically 30 - 60 seconds for broad band filters.

WIRCam is the result of an exemplary collaboration between laboratories in Canada, France, Hawaii, and Taiwan. It has been funded by the three CFHT institutional partners, Canada's National Research Council, France's Centre National de la Recherche Scientifique, and Hawaii's Institute for Astronomy, and through a partnership with two Asian institutes: the Korean Astronomical Observatory and the National Taiwan University / Academia Sinica Institute of Astronomy & Astrophysics.

Images and WIRCam details are available at www.cfht.hawaii.edu/News/WIRCam1stLight/

The Kingston Centre of the Royal Astronomical Society of Canada

Newsletter Submission Info:

I can take most common formats, although I prefer plain text. Pictures should be sent as image files in attachments separate from the articles. Please avoid the use of capitals, asterisks etc for formatting, as I use the publishing software's formats for this kind of emphasis.

E-mail: angle@personainternet.com
Post: Doug Angle,

2006 Publication Deadlines

For the month	**Deadline**
October	September 30
November	October 21
December	November 25
January 2007	December 16

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Kingston Cosmic &Events Calendar
September and October 2006

By Kim Hay

For more detailed information, please refer to the **RASC 2006 Calendar** and the **RASC 2006 Observers Handbook**. Available from Kevin Kell or from National Office, http://www.store.rasc.ca/

September 5 Tuesday	Uranus at opposition
September 6 Wednesday	Star Trek first airs 40 years ago
September 7 Thursday	Largest Full Moon for 2006 14:42
September 8 Friday	RASC Kingston Centre Member's Night Meeting, Stirling Hall Theater "A" 7:30-10:00 pm
September 9 Saturday	KAON Observing Session - Ellis Hall Queen's Observatory - Talk by RASC Member ""I'll be followin' a Moon shadow" - a talk on shadow transits * 9:00 10:30 p.m.* for more information visit http:// members.kingston.net/rasc/pubobs.htm
September 14 Thursday	Last Quarter Moon 7:15
September 19 Tuesday	Saturn 2.7 degrees W of Crescent Moon best in NE of N. America 3 am
September 20 Wednesday	Zodiacal light visible in East before morning twilight for the next 2 weeks
September 21-24 Thursday - Sunday	Alberta Star Party- Caroline Alberta www.syz.com/rasc/asp.htm
September 22 Friday	New Moon 7:45
September 22-24 Friday-Sunday	Fall'N'Stars 2006 hosted by RASC Belleville & Kingston Centre's at Vanderwater Conservation Area http:// www.rascbelleville.ca/fallnstars/
September 23 Saturday	Fall Equinox 12:03 am
September 30 Saturday	First Quarter Moon 7:04

October 6 Friday	Full Moon 23"13
October 8 Sunday	Draconid Meteor peak 7 pm
October 10 Tuesday	Moon occults the Pleiades 1 am
October 13 Friday	Last Quarter Moon
October 13 Friday	RASC Kingston Centre Meeting, Stirling Hall Theater "A" 7:30-10:00 pm
October 14 Saturday	KAON Observing Session - Ellis Hall Queen's Observatory * 9:00 10:30 p.m.* for more information visit http:// members.kingston.net/rasc/pubobs.htm
October 17 Tuesday	Mercury at greatest elongation E(25 degrees) Crescent Moon 1.8 degrees E of Regulus best seen in NE of N America 3:00 am
October 20 Friday	Zodiacal Light visible in E before morning twilight for the next two weeks.
October 21 Saturday	Orionid Meteor Shower Peak 11:00 am
October 22 Sunday	New Moon 1:14
October 23 Monday	Mars in conjuction with the Sun
October 27 Friday	Venus in superior conjunction
October 29 Sunday	First Quarter Moon 16:25 Daylight Savings Time Ends 2:00 am
October 31 Tuesday	Halloween - great time to enjoy sidewalk Astronomy with the ghouls & goblins!